CLAIMS:

1. A method of producing a macroporous ceramic foam for use in biomedical applications and having an open foam structure containing pores with a modal diameter $d_{mode} \geq 100$ μm, which method comprises:

(a) forming a ceramic slip comprising a substantially homogeneous mixture of a ceramic particulate, an organic binder in a liquid carrier, and optionally one or more surfactants, wherein at least one surfactant is present if the organic binder does not function as a surfactant, and wherein the ceramic slip preferably has a viscosity in the range of from 15 to 200 mPas;

(b) foaming the ceramic slip using a ball mill; and

(c) heating the foamed ceramic slip at a temperature sufficient to substantially burn out the organic binder.

2. A method as claimed in claim 1, wherein foaming of the ceramic slip is achieved using a ball mill with milling media selected from alumina (Al_2O_3), enstatite ($MgSiO_3$) or zirconia (ZrO_2) balls.

3. A method as claimed in claim 2, wherein the balls of the milling media have a diameter in the range of from 10 to 30 mm, preferably from 15 to 25 mm.

4. A method as claimed in any one of the preceding claims, wherein foaming of the ceramic slip is achieved using a ball mill in conjunction with gassing

and/or a blowing agent.

5. A method as claimed in any one of the preceding claims, wherein the ceramic slip has a viscosity in the range of from 30 to 100 mPas.

6. A method as claimed in any one of the preceding claims, wherein the ceramic particulate is biocompatible.

7. A method as claimed in any one of the preceding claims, wherein the ceramic particulate comprises one or more of hydroxyapatite, a substituted-hydroxyapatite, a glass, an AW-Glass ceramic and/or alumina.

8. A method as claimed in any one of the preceding claims, wherein the ceramic particulate has a d_{50} of from 1 to 300 μm, preferably from 1 to 15 μm.

9. A method as claimed in any one of the preceding claims, wherein the ceramic particulate has a surface area in the range of from 5 to 200 m^2g^{-1}.

10. A method as claimed in any one of the preceding claims, wherein the organic binder comprises one or more of poly(vinyl alcohol), poly(vinyl pyrrolidone), alginate, poly(lactic acid), poly(vinyl butyral), poly(ethylene glycol) and/or poly(vinyl acetate).

11. A method as claimed in any one of the preceding claims, wherein the liquid carrier comprises water, propan-2-ol or trichloroethane.

12. A method as claimed in any one of the preceding claims, wherein the organic binder is present in the liquid carrier in an amount of from 0.2 to 10 w/v%.

13. A method as claimed in claim 12, wherein the organic binder is present in the liquid carrier in an amount of from 0.5 to 6 w/v%, preferably from 0.5 to 4 w/v%.

14. A method as claimed in any one of the preceding claims, wherein the ceramic slip comprises from 10 to 95 w/v% ceramic particulate.

15. A method as claimed in claim 14, wherein the ceramic slip comprises from 20 to 90 w/v% ceramic particulate, preferably from 40 to 80 w/v% ceramic particulate.

16. A method as claimed in any one of the preceding claims, wherein the ceramic slip further comprises one or both of a dispersant and/or a defloculant.

17. A method as claimed in any one of the preceding claims, wherein prior to burn-out of the organic binder the liquid carrier is allowed to evaporate form the foamed ceramic slip.

18. A method as claimed in claim 17, wherein the foamed ceramic slip is heated at a temperature in the range of from 20 to 100°C to facilitate evaporation of the liquid carrier prior to burn-out of the organic binder.

19. A method as claimed in claim 17 or claim 18,

wherein the concentration of the organic binder in the liquid carrier is selected such that the percentage of binder remaining after substantially all of the liquid carrier has been evaporated is from 0.5 to 10 w/w%.

20. A method as claimed in claim 19, wherein the concentration of the organic binder in the liquid carrier is selected such that the percentage of binder remaining after substantially all of the liquid carrier has been evaporated is in the range of from 1 to 6 w/w%, preferably from 1 to 4 w/w%.

21. A method as claimed in any one of the preceding claims, wherein the foamed ceramic slip is cast in a mould having a surface coated with a release agent.

22. A method as claimed in any one of the preceding claims, wherein burn-out of the organic binder is carried out at a temperature in the range of from 150 to 700°C.

23. A method as claimed in any one of the preceding claims, further comprising sintering the ceramic foam following burn-out of the organic binder.

24. A method as claimed in claim 23, wherein sintering is carried out at a temperature in the range of from 500 to 1600°C.

25. A method as claimed in claim 23 or claim 24, wherein the sintered ceramic foam has a bulk porosity in the range of from 40 to 95%, preferably from 70 to 90%.

26. A method as claimed in any one of claims 23 to 25, wherein the sintered ceramic foam has a strut density in the range of from 60 to 95%, preferably from 70 to 90% of the theoretical density of the ceramic.

27. A method as claimed in any one of claims 23 to 26, wherein the sintered ceramic foam has a modal pore size in the range of from 100 to 2000 μm, preferably from 100 to 1000 μm.

28. A macroporous ceramic foam obtainable by a method according to any one of the preceding claims.

29. A synthetic bone material which comprises a macroporous ceramic foam as claimed in claim 28.

30. A composition which comprises a macroporous ceramic foam as claimed in claim 28 or a synthetic bone material as claimed in claim 29 together with a pharmaceutically acceptable diluent or carrier.

31. A bone implant, filler, cement, tissue engineering scaffold, synthetic bone graft or drug-delivery device which comprises a macroporous ceramic foam as claimed in claim 28, a synthetic bone material as claimed in claim 29 or a composition as claimed in claim 30.